

SEVERN BUSINESS COLLEGE

SBC Level 6 Graduate Diploma in Augmented Reality (AR) and Virtual Reality (VR)

Course Handbook

Qualification
SBC Level 6 Graduate Diploma in Augmented Reality (AR) and Virtual Reality (VR)

Level
6

Guided Learning Hours
480

Total Qualification Time Hours
1200

Credit Value
120

Qualification Objective
This Level 6 Graduate Diploma in Augmented Reality (AR) and Virtual Reality (VR) is designed for learners seeking to develop advanced knowledge and skills in AR and VR technologies. The course aims to provide learners with a comprehensive understanding of AR and VR concepts, tools, and applications, enabling them to become proficient in designing and developing immersive experiences in various sectors, including gaming, healthcare, education, and industry.
Upon completion of the diploma, students will be equipped with the critical thinking, technical skills, and creative approaches necessary to thrive in the evolving world of AR and VR.

Assessment
Assessment is through practical assignments, with no exams - to more accurately reflect the real working environment.

Unit Structure of the Qualification
Level 6 Graduate Diploma in Augmented Reality (AR) and Virtual Reality (VR) (120 credits):

Units	Unit level	Unit credit
Introduction to Augmented Reality (AR) and Virtual Reality (VR)	6	20
AR & VR Development Tools and Platforms	6	20
Advanced Techniques in AR & VR Design	6	20
AR & VR for Business Applications	6	20
Ethics, Privacy, and Security in AR & VR	6	20
Future Directions in AR & VR	6	20

Assessment Grades

Marks Ranges	Marking Criteria
Pass	All learning outcomes are achieved. All assessment criteria are met.
Fail	All learning outcomes are not achieved. All assessment criteria are not met.
No Marks	Plagiarism

UNIT SPECIFICATIONS

Unit Title
Introduction to Augmented Reality (AR) and Virtual Reality (VR)

Level
6

Guided Learning Hours
80

Learning Time Hours
200

Credit Value
20

Learning Outcomes and Assessment Criteria
The learning outcomes describe the abilities that learners will possess after they have completed the unit. The assessment criteria provide a list of achievements sufficient to demonstrate that a learner has met the learning outcomes.

Learning Outcome *To achieve this unit a learner must:*	Assessment Criteria *Assessment of this outcome will require a learner to demonstrate that they can:*
1. Understand the history and development of AR and VR technologies.	1.1. Discuss the evolution of AR and VR technologies from inception to present. 1.2. Identify key milestones in the development of AR and VR. 1.3. Explain the role of hardware and software in shaping AR and VR. 1.4. Evaluate the impact of AR and VR on modern technology industries.
2. Demonstrate an understanding of core AR and VR technologies and hardware.	2.1. Describe the main hardware components used in AR and VR (e.g., headsets, sensors). 2.2. Compare the different types of VR (e.g., fully immersive, non-immersive). 2.3. Identify key software tools used for AR and VR development. 2.4. Evaluate the advantages and challenges of using AR and VR hardware.
3. Identify and analyze the applications of AR and VR in various industries.	3.1. Investigate the use of AR and VR in gaming and entertainment. 3.2. Examine the application of AR and VR in healthcare and medical training. 3.3. Discuss the impact of AR and VR on education and training. 3.4. Analyze the role of AR and VR in industrial applications such as manufacturing and design.
4. Critically evaluate the current and future trends in AR and VR technologies.	4.1. Assess current trends in AR and VR hardware and software. 4.2. Investigate the potential future developments in AR and VR. 4.3. Evaluate the societal implications of widespread AR and VR adoption. 4.4. Discuss the ethical considerations of AR and VR technologies.

UNIT SPECIFICATIONS

Unit Title
AR & VR Development Tools and Platforms

Level
6

Guided Learning Hours
80

Learning Time Hours
200

Credit Value
20

Learning Outcomes and Assessment Criteria
The learning outcomes describe the abilities that learners will possess after they have completed the unit. The assessment criteria provide a list of achievements sufficient to demonstrate that a learner has met the learning outcomes.

Learning Outcome *To achieve this unit a learner must:*	Assessment Criteria *Assessment of this outcome will require a learner to demonstrate that they can:*
1. Understand key software tools and platforms used in AR and VR development.	1.1. Identify leading AR and VR development platforms (e.g., Unity, Unreal Engine). 1.2. Compare software tools for AR (e.g., ARKit, Vuforia) and VR (e.g., Oculus SDK, SteamVR). 1.3. Describe the role of open-source AR and VR development frameworks. 1.4. Analyze the selection process for development tools based on project requirements.
2. Demonstrate proficiency in using AR and VR development environments.	2.1. Create basic 3D objects within a VR development environment. 2.2. Develop an interactive AR application using an appropriate software platform. 2.3. Implement user interaction and navigation in a VR environment. 2.4. Troubleshoot and debug simple AR and VR applications.
3. Explore user interface (UI) and user experience (UX) design in AR and VR.	3.1. Define UI and UX principles as they apply to AR and VR applications. 3.2. Identify best practices for creating intuitive user interfaces in AR and VR. 3.3. Design an AR or VR user interface that enhances user experience. 3.4. Evaluate the impact of UI/UX on the effectiveness of AR and VR applications.
4. Develop a prototype AR or VR application.	4.1. Plan the concept and scope of an AR/VR application. 4.2. Build a functional prototype for testing.

	4.3. Incorporate feedback to improve the application. 4.4. Present the prototype with clear documentation of development processes.

UNIT SPECIFICATIONS

Unit Title
Advanced Techniques in AR & VR Design

Level
6

Guided Learning Hours
80

Learning Time Hours
200

Credit Value
20

Learning Outcomes and Assessment Criteria
The learning outcomes describe the abilities that learners will possess after they have completed the unit. The assessment criteria provide a list of achievements sufficient to demonstrate that a learner has met the learning outcomes.

Learning Outcome *To achieve this unit a learner must:*	**Assessment Criteria** *Assessment of this outcome will require a learner to demonstrate that they can:*
1. Apply advanced 3D modeling techniques in AR and VR environments.	1.1. Create realistic 3D models for AR and VR environments. 1.2. Utilize textures, materials, and lighting for realistic rendering. 1.3. Integrate 3D models into AR and VR applications. 1.4. Evaluate performance and optimization techniques for 3D models in AR/VR.
2. Implement motion tracking and spatial awareness in AR and VR.	2.1. Understand the principles of motion tracking in AR and VR systems. 2.2. Develop applications that incorporate real-time motion tracking. 2.3. Integrate spatial awareness features (e.g., object placement and movement). 2.4. Test and refine motion tracking in real-world scenarios.
3. Create interactive simulations using advanced AR and VR tools.	3.1. Develop dynamic environments that respond to user interactions. 3.2. Program advanced interactions (e.g., gesture-based control, voice commands). 3.3. Implement real-time feedback in AR and VR simulations. 3.4. Integrate multiple sensory inputs for an immersive experience.
4. Optimize AR and VR applications for performance and usability.	4.1. Analyze the performance of AR and VR applications on different hardware. 4.2. Implement techniques to optimize frame rates and reduce latency. 4.3. Test applications for usability and user comfort. 4.4. Refine applications based on user testing feedback.

UNIT SPECIFICATIONS

Unit Title
AR & VR for Business Applications

Level
6

Guided Learning Hours
80

Learning Time Hours
200

Credit Value

20

Learning Outcomes and Assessment Criteria

The learning outcomes describe the abilities that learners will possess after they have completed the unit. The assessment criteria provide a list of achievements sufficient to demonstrate that a learner has met the learning outcomes.

Learning Outcome *To achieve this unit a learner must:*	**Assessment Criteria** *Assessment of this outcome will require a learner to demonstrate that they can:*
1. Explore the role of AR and VR in business innovation.	1.1. Identify the potential business applications of AR and VR technologies. 1.2. Analyze case studies of AR and VR adoption in business. 1.3. Evaluate the competitive advantages AR and VR can offer to businesses. 1.4. Assess the risks and challenges for businesses implementing AR and VR technologies.
2. Apply AR and VR to enhance marketing and customer engagement.	2.1. Design an AR or VR marketing campaign for a product or service. 2.2. Evaluate the effectiveness of AR and VR in engaging customers. 2.3. Analyze the cost-benefit ratio of AR and VR marketing strategies. 2.4. Develop an interactive VR experience for a customer-centric business.
3. Investigate AR and VR in product development and prototyping.	3.1. Explore the role of AR and VR in rapid product prototyping. 3.2. Create a prototype using AR/VR to simulate product concepts. 3.3. Evaluate the impact of AR and VR on product design cycles. 3.4. Investigate AR/VR's role in collaborative product development.
4. Evaluate the integration of AR and VR technologies into business operations.	4.1. Investigate operational efficiencies gained through AR and VR technologies. 4.2. Assess the impact on employee training and development. 4.3. Analyze the impact of AR and VR on customer service and support. 4.4. Propose an AR or VR-based solution to improve business processes.

UNIT SPECIFICATIONS

Unit Title

Ethics, Privacy, and Security in AR & VR

Level

6

Guided Learning Hours

80

Learning Time Hours

200

Credit Value

20

Learning Outcomes and Assessment Criteria

The learning outcomes describe the abilities that learners will possess after they have completed the unit. The assessment criteria provide a list of achievements sufficient to demonstrate that a learner has met the learning outcomes.

Learning Outcome *To achieve this unit a learner must:*	**Assessment Criteria** *Assessment of this outcome will require a learner to demonstrate that they can:*
1. Understand the ethical considerations of AR and VR technologies.	1.1. Discuss the ethical challenges of AR and VR in the context of user experience. 1.2. Analyze the impact of AR and VR on user behavior and decision-making. 1.3. Identify potential biases in AR and VR experiences. 1.4. Evaluate the role of developers in creating ethical AR and VR content.
2. Examine privacy concerns related to AR and VR.	2.1. Identify privacy risks associated with AR and VR technologies. 2.2. Analyze the data collection practices in AR and VR applications. 2.3. Discuss the implications of sharing personal data in AR and VR environments. 2.4. Propose privacy protection strategies for AR and VR applications.
3. Investigate security challenges in AR and VR systems.	3.1. Identify common security threats to AR and VR applications. 3.2. Evaluate the security measures necessary to protect AR and VR systems. 3.3. Discuss the impact of cybersecurity issues on user trust and adoption. 3.4. Recommend strategies for securing AR and VR experiences.

4. Develop best practices for responsible AR and VR development.	4.1. Identify industry standards for ethical AR and VR development. 4.2. Propose a framework for responsible content creation in AR and VR. 4.3. Develop guidelines for securing user data in AR and VR applications. 4.4. Promote user safety and well-being in AR and VR environments.

UNIT SPECIFICATIONS

Unit Title
Future Directions in AR & VR

Level
6

Guided Learning Hours
80

Learning Time Hours
200

Credit Value
20

Learning Outcomes and Assessment Criteria
The learning outcomes describe the abilities that learners will possess after they have completed the unit. The assessment criteria provide a list of achievements sufficient to demonstrate that a learner has met the learning outcomes.

Learning Outcome *To achieve this unit a learner must:*	**Assessment Criteria** *Assessment of this outcome will require a learner to demonstrate that they can:*
1. Investigate emerging trends in AR and VR technology.	1.1. Analyze current research and development in AR and VR. 1.2. Identify emerging technologies that may influence AR and VR. 1.3. Explore the potential of AI integration in AR and VR systems. 1.4. Predict future innovations in AR and VR over the next decade.
2. Explore the role of AR and VR in social transformation.	2.1. Investigate how AR and VR can change the way people interact socially. 2.2. Discuss the societal impacts of widespread AR and VR adoption. 2.3. Examine how AR and VR could influence education and learning environments. 2.4. Predict the potential impact of AR and VR on future communication technologies.
3. Analyze the scalability and sustainability of AR and VR technologies.	3.1. Investigate challenges related to the scalability of AR and VR technologies. 3.2. Assess the environmental and economic sustainability of AR and VR systems. 3.3. Discuss the energy consumption of AR and VR systems. 3.4. Propose strategies to make AR and VR technologies more scalable and sustainable.
4. Design a proposal for a future AR or VR project.	4.1. Identify a potential area for innovation using AR or VR. 4.2. Create a project plan for developing an AR or VR product. 4.3. Address technical, social, and business challenges within the proposal. 4.4. Present the proposal with clear goals and expected outcomes.